2-E-22

PRELIMINARY OPERATING INSTRUCTIONS

FOR THE

ERIE INSTRU/MATION

MODEL 925 UNIVERSAL COUNTER TIMER

B&O 502

MP MASTER
MA29721

Eldorado Electronics

PRELIMINARY OPERATING INSTRUCTIONS

FOR THE

ERIE INSTRU/MATION

MODEL 925 UNIVERSAL COUNTER TIMER

ELDORADO ELECTRONICS has purchased the assets of the ERIE-PACIFIC DIVISION and will continue to make these instruments available to their customers. Please address all inquiries to the address below.

ELDORADO ELECTRONICS
2821 Tenth Street
Berkeley 10, California

Eldorado Electronics

1832 Second Street, Berkeley 10, California, U.S.A., Tel. THornwall 1-4613

WARRANTY

Eldorado instruments are warranted for a period of one year from date of shipment to original purchaser to be free from defects in material and workmanship. This warranty does not apply to vacuum tubes, except as they are warranted by their manufacturers. The liability of Seller under this warranty is limited to replacing or repairing any instrument or component thereof which is returned by Buyer at his expense during such period and which has not been subjected to misuse, neglect, improper installations, repair, alteration, or accident. Seller shall have the right of final determination as to the existence and cause of a defect. In no event shall Seller be liable for collateral or consequential damages. This warranty is in lieu of any other warranty, express, implied or statutory, and no agreement extending or modifying it will be binding upon Seller unless in writing and signed by a duly authorized company officer.

DAMAGE IN SHIPMENT

Every Eldorado instrument is carefully inspected to be in perfect working order at the time of shipment. Upon receipt of shipment, the container should be inspected, before unpacking, for evidence of damage. If there is any evidence of damage, the container should not be opened, until the shipping company has been notified. After the instrument has been unpacked, it should be checked both for physical damage and proper operation. In any case where damage occurs in shipment, the customer should notify the carrier so that an inspection can be made and a claim filed. A full report of the damage should be obtained and a copy forwarded to Eldorado Electronics. Eldorado assumes no liability for damage in shipment, and any repairs of such damage do not come under warranty provisions but will be handled as charge repairs.

REPAIRS

When an Eldorado instrument requires service, the nearest Eldorado representative should be contacted; all representatives will provide immediate service or arrange factory returns when necessary. Instrument (s) returned to the factory by the customer should be carefully packed, shipped transportation prepaid, and insurance arranged, by the customer. Freight and insurance on the return trip to the customer will be arranged by Eldorado and charged to the customer.

Please specify both model and serial number in all correspondence concerning Eldorado instruments. Address all inquiries on operation or applications of Eldorado instruments to your nearest sales representative or Sales Manager, Eldorado Electronics Company, 1832 Second Street, Berkeley 10, California.

MODEL 925 UNIVERSAL COUNTER-TIMER

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WARRANTY

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SECTION I

INTRODUCTION

The Model 925 Universal Counter Timer is designed to offer the ultimate in reliable counting of periodic or random electrical events and precise measurement of Frequency, Period, Time Interval, Ratio, and Gated Input. Built-in memory provides readout storage, continuous display while counting, more frequent sampling, and less operator eye fatigue. The Display Time is continuously variable from .1 to 10 seconds, or Infinite Display with manual reset.

The unit provides visual monitoring of any function on the front panel by means of an in-line NIXIE readout combined with automatic decimal point location. A 1-2-4-8-binary coded output is available on the rear of the unit for operation of a printer or other accessory.

An internal self-test is provided in the instrument to check counter operation with any selected time base.

The unit features modular construction for maximum flexibility and easy maintenance.

MODEL 925 UNIVERSAL COUNTER-TIMER

SPECIFICATIONS

OPERATING MODE	FREQUENCY	PERIOD AND MULTIPLE PERIOD	TIME INTERVAL	RATIO AND MULTIPLE RATIO	COUNTING
RANGE	DC to 20 MC	DC to 100 KC	0.3usec to 10^6 sec.	DC to 20 MC	DC to 20 MC	DC to 20 MC
ACCURACY	±1 count ± time base stability	±1 count ± time base stability ± trigger level accuracy	±1 count ± time base stability	± 1 count ± trigger level accuracy	Absolute	± 1 count ± trigger level
GATING INTERVAL	0.1 usec. to 10 sec in decade steps	1 or up to 10^6 periods of input signal	Time Interval between ext. START & STOP signals.	1 or up to 10^6 periods of input signal F^2	Manually operated front panel.	Time interval between ext. START & STOP signals.
DISPLAY	Input freq. in MC, KC, automatic decimal pt.	Elapsed time in sec. ms&usec of 1 or up to 10^6 period) Auto. decimal point	Elapsed time in sec, ms and usec-automatic decimal point.	$\frac{F_1}{F_2} \times 10^n$ n = 1 to 6.	Number of cycles of input signal.	Number of cycles of input signal.

DISPLAY: In-line using 100,000 hour wide-angle Nixies.
DISPLAY TIME: Continuously variable from 0.1 to 10 seconds.

INPUT: BNC connectors, type UG-625/U
SENSITIVITY: 0.1 volt RMS DC or AC coupled.
IMPEDANCE: 1 megohm shunted by 50 pf.

STABILITY: 1 part in 10^8 / day. 5 parts in 10^8 /week.

no. of decades: Eight (8).

MODEL 925 UNIVERSAL COUNTER-TIMER

SPECIFICATIONS
(Continued)

PRINTER OUTPUT:	1-2-4-8- BCD output for operation of printer or other accessories.
SELF CHECK:	Checks counter operation with any selected time base.
POWER:	115/230 volts ± 10%, 50/60 cps, 100 watts.
SIZE:	Model 925 (portable unit) 12" W x 7 ½" H x 17" D. Model 925R (rack mounted) 19" W x 3½" H x 17" D.
Weight:	30 pounds net. Shipping weight: 40 pounds nominal.

SECTION III

OPERATING PROCEDURES

3.1 GENERAL

This section describes the procedure necessary to operate the Universal Counter Timer, and perform each function for which the unit was designed. Due to simplicity of design, operation of the instrument is not complex. However, personnel should carefully study the following instructions to insure optimum performance, and to minimize the possibility of erronious readings due to controls not properly adjusted by the operator. All operating controls are located on the front panel, with exception of the External Time Base Input and its control which is on the rear of the unit.

3.2 PRELIMINARY CHECKS, Proceed as follows:

a. Connect line cord to a 115 volt, 50-60 cps power source.

b. Set Power Switch to ON.

c. Check that the EXT, - INT. Freq. switch (located on rear of unit) is in the INT. position.

d. Set SAMPLING control 9° clock for automatic recycling.

e. Set FUNCTION switch to CHECK.

f. Set TIME BASE switch to 1. An internally generated Clock Frequency of 10 MC is counted for the duration of the selected Time Interval which is determined by the TIME BASE switch setting. The displayed count is 10 and the Automatic Decimal Point indicates Megacycles.

g. Check for accuracy of all Time Base Intervals. The necessary settings of TIME BASE switch and NIXIE readouts are tabulated below.

3.3

TIME BASE (in usec)	NIXIE (Readout)	DECIMAL POINT (Indicates)
1	00000010.	MC
10	0000010.0	MC
100	000010.00	MC
1000	0001000.0	KC
10^4	001000.00	KC
10^5	01000.000	KC
10^6	1000.0000	KC
10^7	000.00000	KC

3.4 FREQUENCY

a. A high Input Impedance, DC amplifier allows Frequency measurements up to 20 MC, for either Sine Wave or Pulse Input from .1 volt RMS to 100 RMS. An ATTENUATOR switch, located directly above the input connector, is provided to attenuate all signals in excess of 1 volt RMS.

The trigger level control compensates for applied DC voltages and also sets the operating point of the DC amplifier. The AC-DC Toggle switch adjacent to the input connector selects the input mode.

b. Repeat steps a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to FREQ.

d. Select proper Attenuation.

e. Select either AC or DC input mode, depending on type of signal.

f. Connect the signal source to be measured to the input connector marked FREQ. & PER. - COUNT.

g. Set Time Base switch to desired Gate Time position.

h. Adjust TRIGGER LEVEL. This can be accomplished by setting the control to 12° clock and rotating until a reliable count is evident. The degree and direction of retation of the TRIGGER LEVEL control depends on the polarity and magnitude of the applied signal.

i. Set SAMPLING control to desired display time by varying control from minimum display, indicated as FAST on Front Panel of unit, to maximum display time, marked SLOW. Iffinfinite display id desired, switch SAMPLING sontrol to MANUAL. To initiate a new counting cycle push RESET switch.

j. The measured frequency is displayed in terms of MC or KC depending on TIME BASE switch setting.

3.5 PERIOD

a. Single period measurement up to 10^6 cps can be taken. The accuracy of period measurement depends to a great extent on modulation and/or signal-to-noise ratio of the applied input signal since the input signal determines the operation of internal gate. The frequency to be counted is selected by setting of TIME BASE switch and ranges from 1 cps to 10 MC.

b. Repeat steps a, b, and d of paragraph 3.3.

c. Set FUNCTION switch to PERIOD.

d. Set TIME BASE switch to select desired Clock Frequency.

e. Repeat e, f, h, and i of paragraph 3.4.

f. The measured Period of the applied signal is displayed in times of usec, msec, or sec depending on TIME BASE switch setting.

3.6 X PERIOD

a. To allow average Period measurement or better accuracy particularly on higher frequencies a multiple period function denoted by X PERIOD is incorporated. The TIME BASE switch setting denotes the multiple of the period the counter will measure. The Clock Frequency is 10 MC.

b. Repeat a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to X PERIOD.

d. Repeat steps e, f, h, and i of paragraph 3.4.

e. The measured multiple Period is displayed in terms of 0.1 usec.

3.7 TIME INTERVAL

a. Time Intervals are measured by counting clock pulses for an interval beginning with an externally applied START signal and ending coincidence with an applied STOP signal. The rate of the counted clock pulses depends on the TIME BASE switch setting. The Slope Polarity switch adjacent to input connector allows triggering on the positive or negative portion of applied signal.

b. Repeat steps a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to TIME INTERVAL.

d. Set TIME BASE to desired Clock Frequency.

e. Put Input Selector switch in DC mode.

f. Connect Start Signal to input marked START-RATIO.

g. Connect STOP Signal to input marked STOP.

h. Repeat step h of paragraph 3.4 on both input channels.

i. Repeat step i of paragraph 3.4.

k. The measured Time Interval of the applied Start and Stop signal is displayed in terms of usec, msec, and sec.

3.8 GATED INPUT

a. The GATED Input function utilizes all three DC amplifiers. A Start Signal applied at the START-RATIO input will open the gate, whereas a signal at the STOP input will close the gate. The Frequency or Random Pulses to be counted will be applied to the input marked FREQ. - PER, & COUNT.

b. Repeat steps a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to Gated Input.

d. Connect the Frequency to be counted to input marked FREQ. - PERIOD. - COUNT.

e. Connect start signal to input marked START-RATIO.

f. Connect Stop Input to input marked STOP.

g. Select either AC or DC input mode, depending on type of signal.

h. Repeat step h of paragraph 3.3 on all three inputs.

i. Repeat step i of paragraph 3.4.

j. The displayed count is the number of pulses counted between opening and closing of gate which operation is controlled by externally applied START and STOP pulses.

3.9 RATIO

a. The Ratio of two unknown frequencies can be measured by applying both frequencies to the counter in the RATIO mode. The lower of the two frequencies operates the internal gate, whereas the higher frequency will be counted.

b. Repeat steps a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to RATIO.

d. Connect the higher frequency to input marked FREQ. - PERIOD. - COUNT.

e. Connect lower frequency to input marked START-RATIO?

f. Repeat steps d, e, h, and i of paragraph 3.4.

g. The numerical readout displayed by the NIXIE is the Ratio of the two applied frequencies.

3.10 X RATIO

a. If a higher accuracy than provided by RATIO is desired, the Multiple or X RATIO function can be employed. Higher accuracy is obtained by the averaging method used in multiple PERIOD measurements.

b. Repeat steps a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to X RATIO.

d. Connect the higher frequency to input FREQ. - PERIOD.,- COUNT.

e. Connect lower frequency to input marked START-RATIO.

f. Repeat steps e, h, and i of paragraph 3.4.

g. Set TIME BASE switch for desired multiple Ratio.

h. The numerical readout displayed by the NIXIE is the Ratio of two applied frequencies times the TIME BASE switch setting.

3.11 COUNT

a. During this mode of operation the internal gate is being held open and all applied signals are accumulated and continuously displayed. The closing of the gate and end of Count can be achieved by setting FUNCTION switch to OFF position. The accumulated Count has an infinite Display Time. To initiate a new Count cycle push RESET switch, clearing the count, and open the gate by putting the FUNCTION switch into Count position.

b. Repeat steps a, b, c, and d of paragraph 3.3.

c. Set FUNCTION switch to COUNT.

d. Repeat steps d, e, f, and h of paragraph 3.4.

3.12 OFF

The OFF position manually closes the internal gate as described in paragraph 3.11 (a).

3.13 CLOCK

The BNC connector provides fast negative dc coupled pulses whose repetition rate is determined by the setting of the TIME BASE switch.

3.13 OVEN

This incandescent light monitors the oven cycling of the 1 MC crystal.

3.15 RESET

For manual operation this push-button switch has to be depressed to initiate a new counting cycle.

3.16 GATE LIGHT

This Gate Light indicates the internal Gate operation. The light is on during Gate open and off during Gate closed cycle.

3.17 Ext. - Freq. and Ext. - Int. switch

This Input is located at rear of instrument and is used if a 1 MC Clock Frequency of higher accuracy then the internal provided Crystal Frequency is available. The adjacent slide switch determines External or Internal mode of operation.

3.18 DECIMAL POINT

a. For ease of operation and readout and automatic Decimal Point has been provided for the CHECK, FREQUENCY, PERIOD and TIME INTERVAL mode of operation. The readout is in either MC, KC, usec, msec, or sec., depending on mode of operation and setting of TIME BASE switch. (For detailed information see Readout Logic below.)

b. Decimal Light Readout Logic.

TIME BASE usec	CLOCK	FREQUENCY	PERIOD	TIME INTERVAL
.1	MC	MC	usec.	usec.
1.	MC	MC	usec.	usec.
10.	MC	MC	msec.	msec.
100.	MC	MC	msec.	msec.
1000.	MC	KC	msec.	1msec.
10^4	KC	KC	sec.	sec.
10^5	KC	KC	sec.	sec.
10^6	KC	KC	sec.	sec.
10^7	KC	KC	NO LIGHT	NO LIGHT

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

FUNCTION

GATE & BAT

MEMORY CLEAR & TRANSFER GATE DRIVER

READOUT & MATRIX

MEMORY FLIP-FLOP

COUNTING DECADE 20 MC

COUNTING DECADE 2MC

COUNTING DECADE 200 KC

COUNTING DECADE 20KC

COUNTING DECADE 2KC

COUNTING DECADE 200 CPS

COUNTING DECADE 20 CPS

DIFFERENTIAL AMPLIFIER & SLOPE SELECTOR

AUTO RECYCLE

400 CPS MULTIVIBRATOR

START

STOP

GATE CONTROL FLIP-FLOP

INHIBIT FLIP-FLOP

RESET CLAMP & DRIVER

RESET PULSE GENERATOR

RESET PULSE AMPLIFIERS

START INHIBIT FLIP-FLOP

TIME BASE GATES & EMITTER FOLLOWERS

10 MC ENABLE

POSITIVE RESET

NEGATIVE RESET

TIME BASE DECADE 1MC

TIME BASE DECADE 100KC

TIME BASE DECADE 10KC

TIME BASE DECADE 1KC

TIME BASE DECADE 100CPS

TIME BASE DECADE 10CPS

TIME BASE DECADE 1CPS

+15V

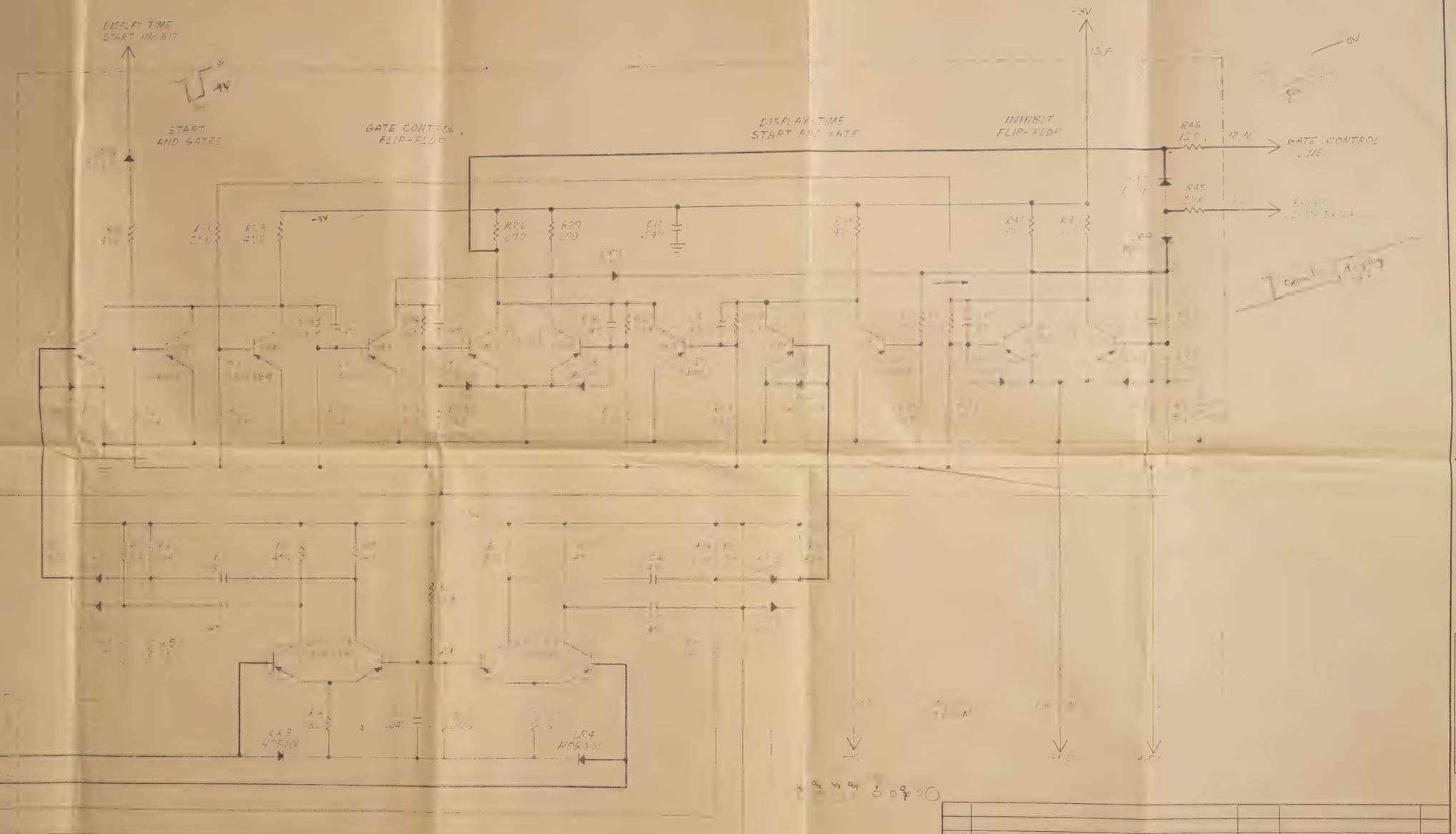
ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACE DECIMALS ± .015; 3 PLACE DECIMALS ± .005; HOLES + .005; ANGLES	DRAWN G.P.BAKER 11/4/62	ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.
NEXT ASSEMBLY	DO NOT SCALE THIS DRAWING		CHECKED T.J. CUTMA 11/6/62	BLOCK DIAGRAM 20 MC UNIVERSAL COUNTER-TIMER MODEL 925
	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS		APPROVED H.B. DECK 11/6/62	CODE IDENT NO. 05162 SIZE D
	PARTS LIST NO.	MATERIAL	APPROVED	SCALE SHEET

D-22113

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	CORRECTED DRAFT ERRORS NO CO	1-1-62	WS/Hales



NOTES:
1. RESISTOR VALUES IN OHMS, 5% 1/4W
2. CAPACITOR VALUES IN MFD, 10%

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON

NEXT ASSEMBLY

DIMENSIONS ARE IN INCHES

DO NOT SCALE THIS DRAWING

KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS

PARTS LIST NO.

TOLERANCES UNLESS OTHERWISE SPECIFIED	
2 PLACE DECIMALS	± .015
3 PLACE DECIMALS	± .005
HOLES	± .005
ANGLES	
MATERIAL	

DRAWN G. PEAKER, 12-14-61

CHECKED

APPROVED

APPROVED

ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

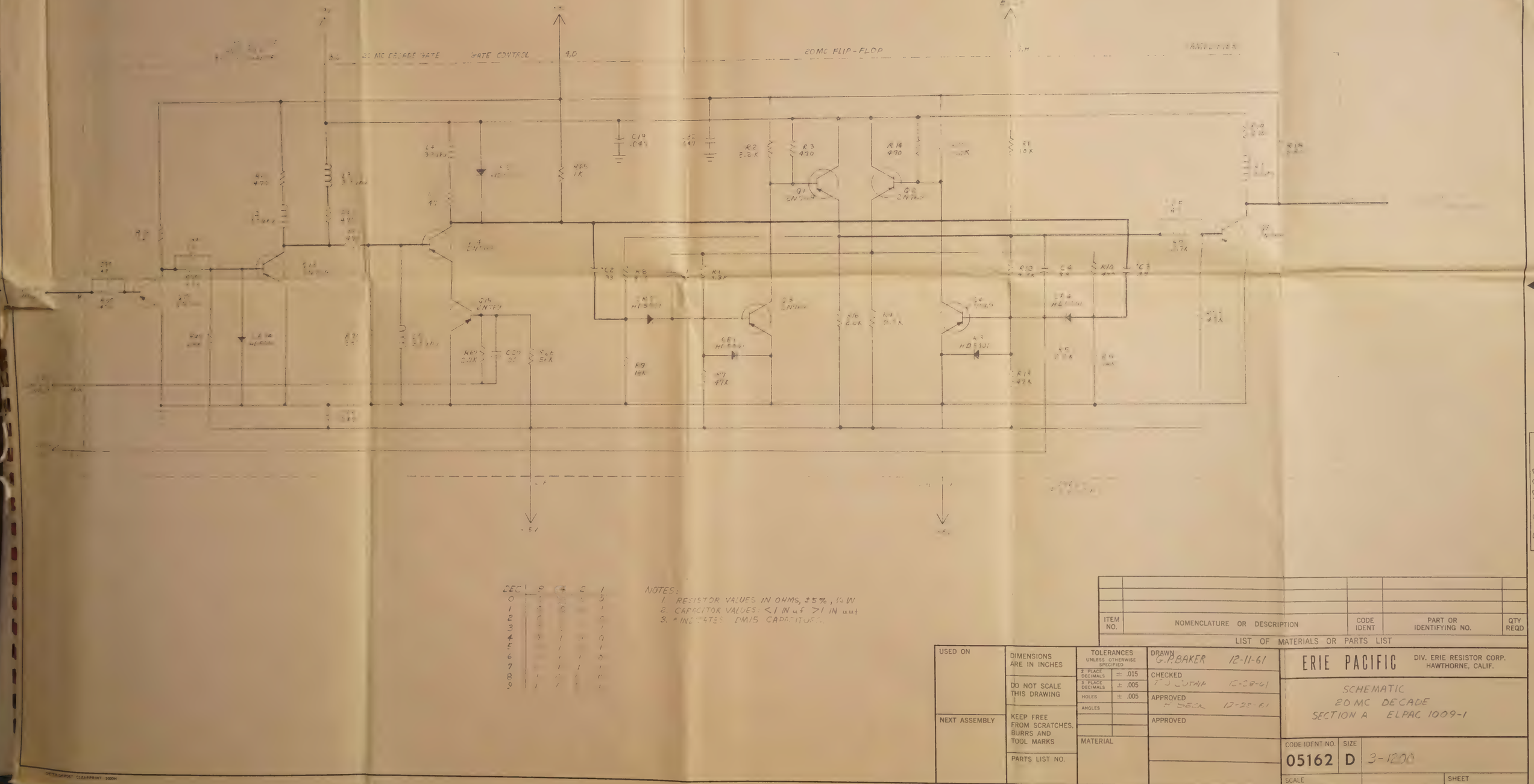
HALF COUNTER LOGIC MODEL 509, ELPAC 509-1

CODE IDENT NO. 05162 | SIZE D | 3-1303

SCALE | SHEET

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	CORRECTED DRAFT ERRORS NO CO	1-[illegible]-62	[illegible]



SEC	8	4	2	1
0				0
1				1
2			1	0
3			1	1
4		1	0	0
5		1	0	1
6		1	1	0
7		1	1	1
8	1			0
9	1			1

NOTES:
1. RESISTOR VALUES IN OHMS, ±5%, ½W
2. CAPACITOR VALUES: <1 IN uf >1 IN uuf
3. * INDICATES DM15 CAPACITORS.

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD
	LIST OF MATERIALS OR PARTS LIST			

USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED	DRAWN G.P.BAKER 12-11-61
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NEXT ASSEMBLY	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	3 PLACE DECIMALS ± .005	APPROVED P.SECK 12-28-61
	PARTS LIST NO.	HOLES ± .005	APPROVED
		ANGLES	
		MATERIAL	

ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

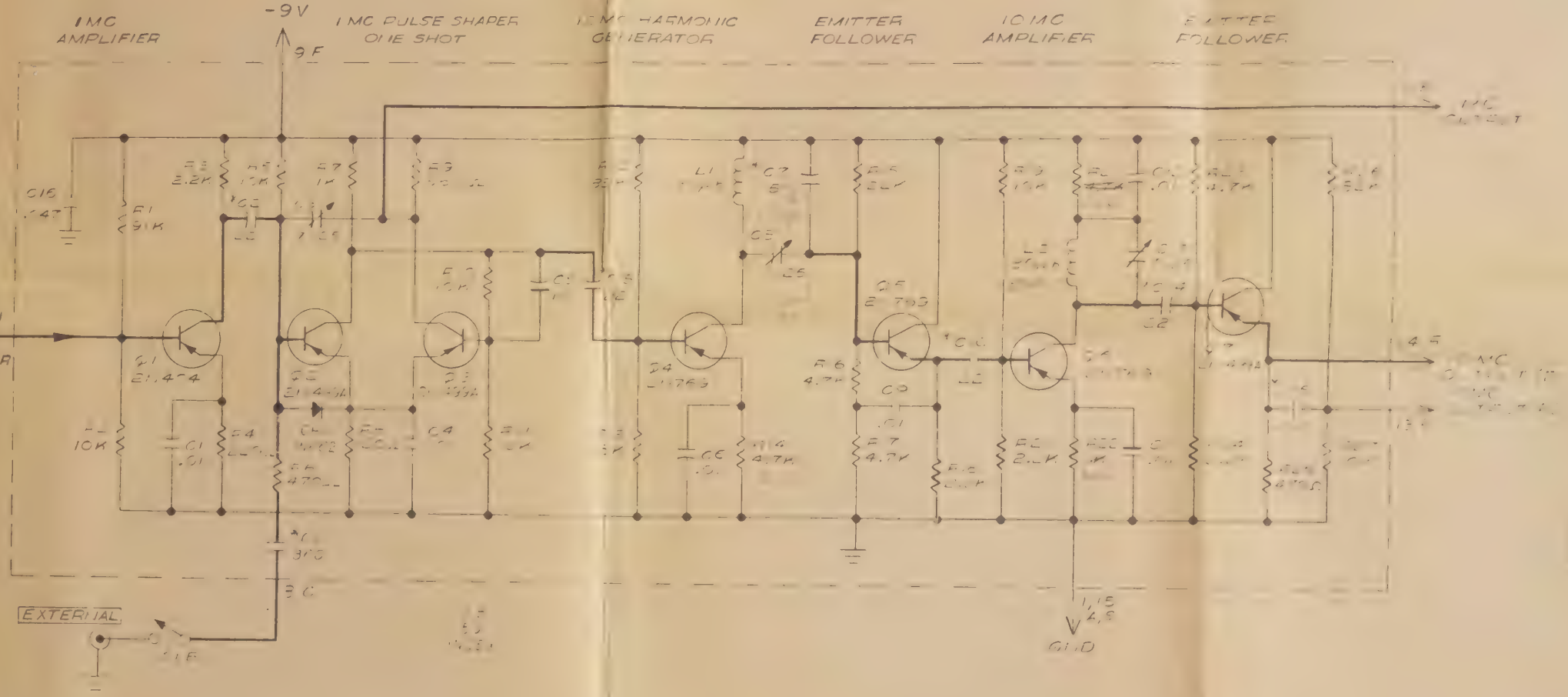
SCHEMATIC
20 MC DECADE
SECTION A ELPAC 1009-1

CODE IDENT NO.	SIZE	
05162	D	3-1200
SCALE		SHEET

3-1200

DIETZGEN® CLEARPRINT 1000H

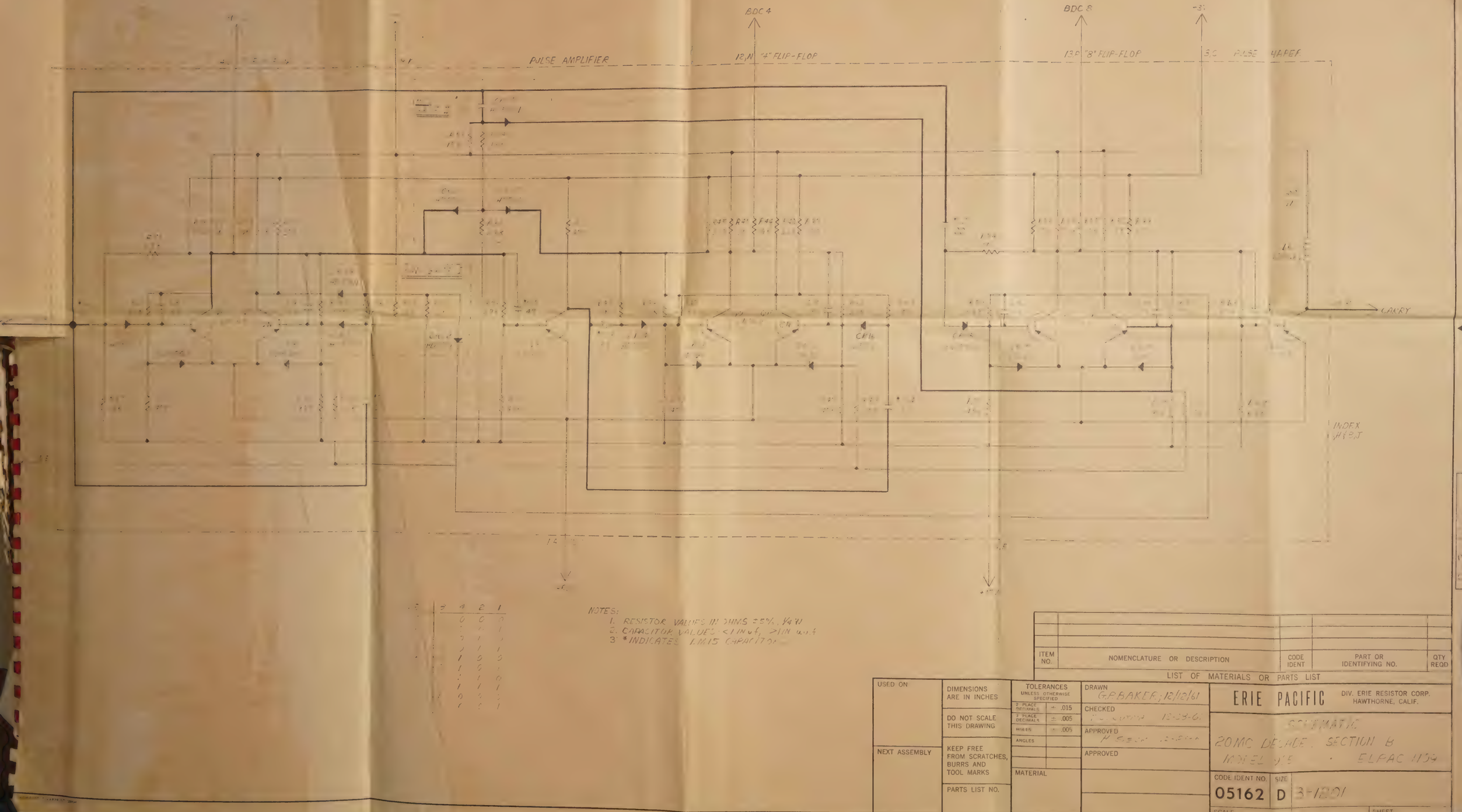
ITEM	MATERIAL AND/OR DESCRIPTION	DWG No	QTY



3-1-60

APPROVED		DUB NO 0	P L No		NEXT ASSEMBLY
DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED		SCHEMATIC. 10 MC HARMONIC GENERATOR MODEL 925 ELPAC 109-1		
DO NOT SCALE THIS DRAWING	2 PLACE DECIMALS	±			
KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	3 PLACE DECIMALS	± .005	DRAWN BY	DATE 9-20-61	SCALE NONE
	FRACTIONS	± 1/64	CHECKED BY T.J. SMITH		
	ANGLES	±	ERIE PACIFIC DIV ERIE RESISTOR CORP. HAWTHORNE CALIF.		DWG NO C 3-180

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	CORRECTED DRAFT ERRORS VR CD	1-11-62	[illegible]



B	4	2	1
	0	0	0
			1
		1	
	1	1	1
1	0	0	
1	0	1	
1	1	0	
1	1	1	
1	0	0	1

NOTES:
1. RESISTOR VALUES IN OHMS ±5%, ½W
2. CAPACITOR VALUES <1 IN uf, >1 IN uuf
3. * INDICATES 1 MIS CHARACTOR

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD
	LIST OF MATERIALS OR PARTS LIST			

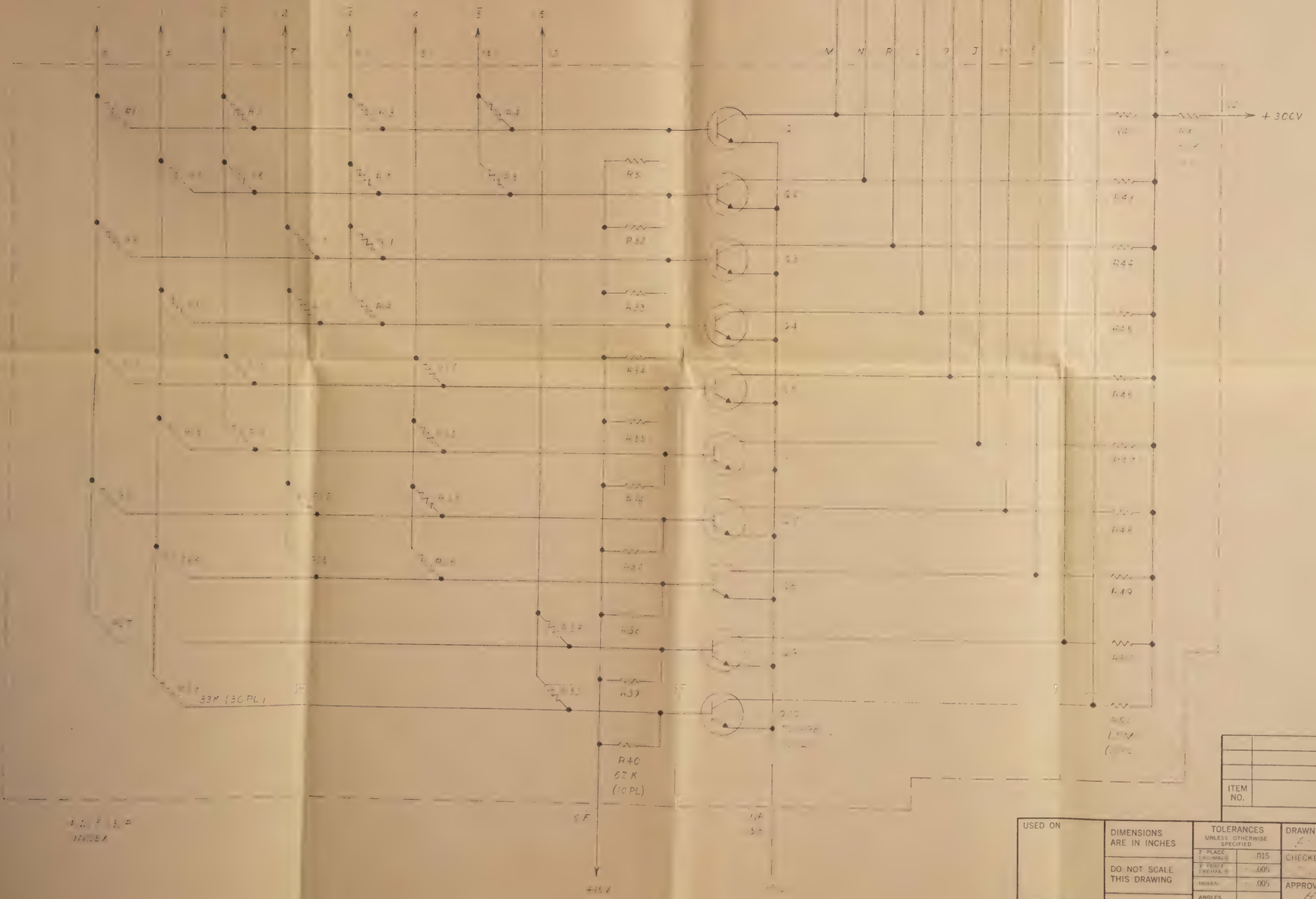
USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED	DRAWN G.P.BAKER, 12/12/61
	DO NOT SCALE THIS DRAWING	2 PLACE DECIMALS ± .015	CHECKED [illegible] 12-28-61
		3 PLACE DECIMALS ± .005	APPROVED [illegible]
NEXT ASSEMBLY	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	FRACTIONS ± .005	APPROVED
		ANGLES	
	PARTS LIST NO.	MATERIAL	

ERIE PACIFIC — DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

SCHEMATIC
20MC DECADE, SECTION B
MODEL 915 · ELPAC 1154

CODE IDENT NO.	SIZE	
05162	D	3-1201
SCALE		SHEET

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



1. RESISTOR VALUES IN OHMS, ±5%, ¼ W
NOTE: UNLESS OTHERWISE SPECIFIED

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACE DECIMAL ±.015; 3 PLACE DECIMAL ±.005; HOLES ±.005; ANGLES	DRAWN	ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.
	DO NOT SCALE THIS DRAWING		CHECKED	SCHEMATIC BCD TO DECIMAL MATRIX WITH NIXIE DRIVERS. ELPAC 909-1 MODEL 925
NEXT ASSEMBLY	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS		APPROVED H. GERK 12-20-62	CODE IDENT NO. 05162 / SIZE D / 3-1202
	PARTS LIST NO.	MATERIAL	APPROVED	SCALE / SHEET

D-3-1202

REVISIONS			
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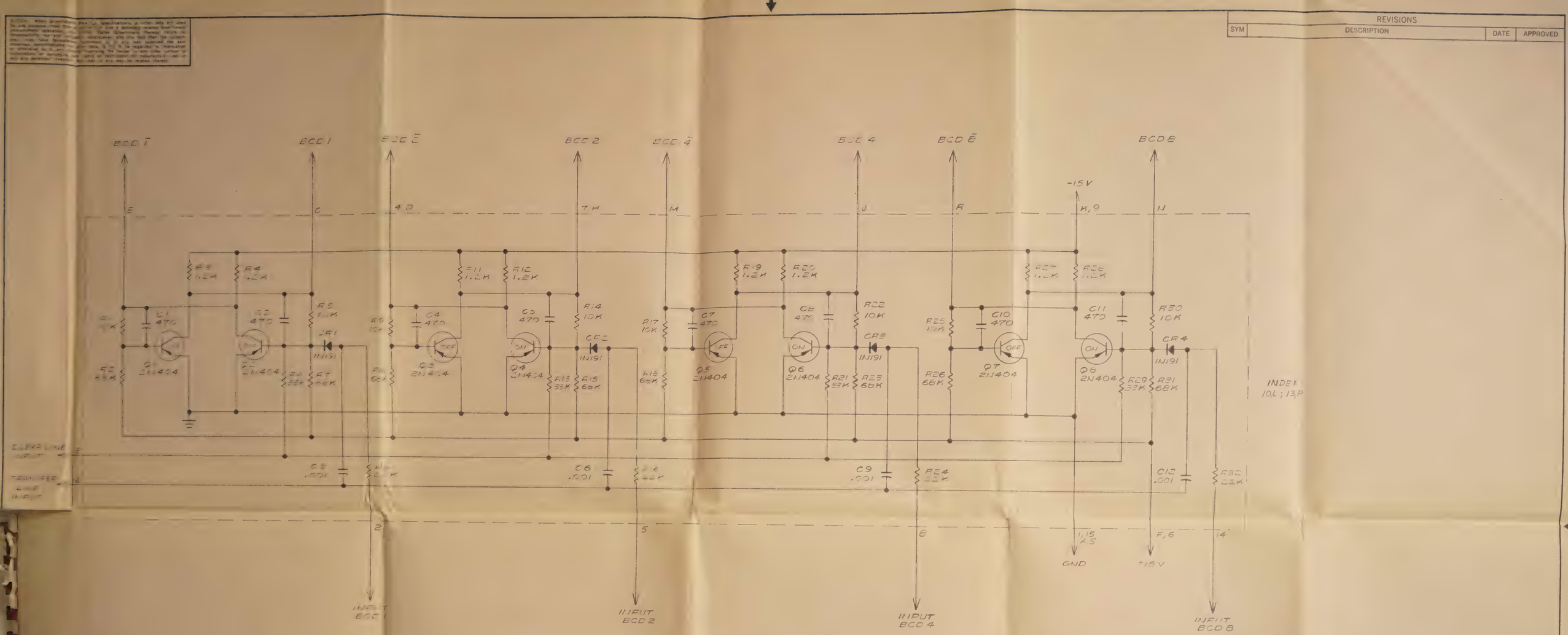


NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS 1/4W ±5%.
2. CAPACITOR VALUES: < 1 IN μf, > 1 IN μμf.

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

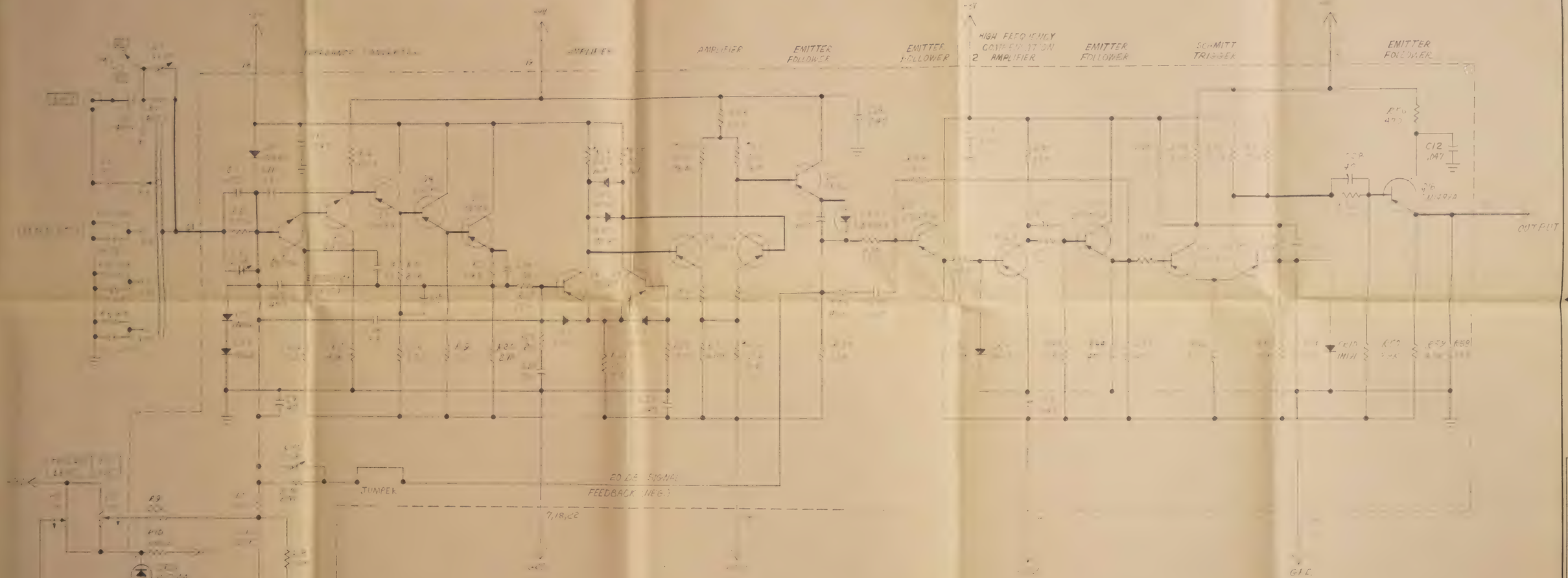
LIST OF MATERIALS OR PARTS LIST

USED ON: MODEL 925	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACE DECIMALS ± .015; 3 PLACE DECIMALS ± .005; HOLES ± .005; ANGLES	DRAWN: [illegible] 9-22-61	ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.
NEXT ASSEMBLY	DO NOT SCALE THIS DRAWING		CHECKED: T. J. [illegible] 10-03-61	SCHEMATIC, DIXIE MEMORY 20 MC COUNTER MODEL 925 ELPAC 809
	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS		APPROVED: H. SEEK 10-2-61	CODE IDENT NO. 05162; SIZE D; 3-1164
	PARTS LIST NO.	MATERIAL	APPROVED	SCALE NONE; SHEET

3-1164

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED "A" & "TRIGGER" LEVEL POTS R Clarke 3-21-62	4/23/62	H.R. SECK



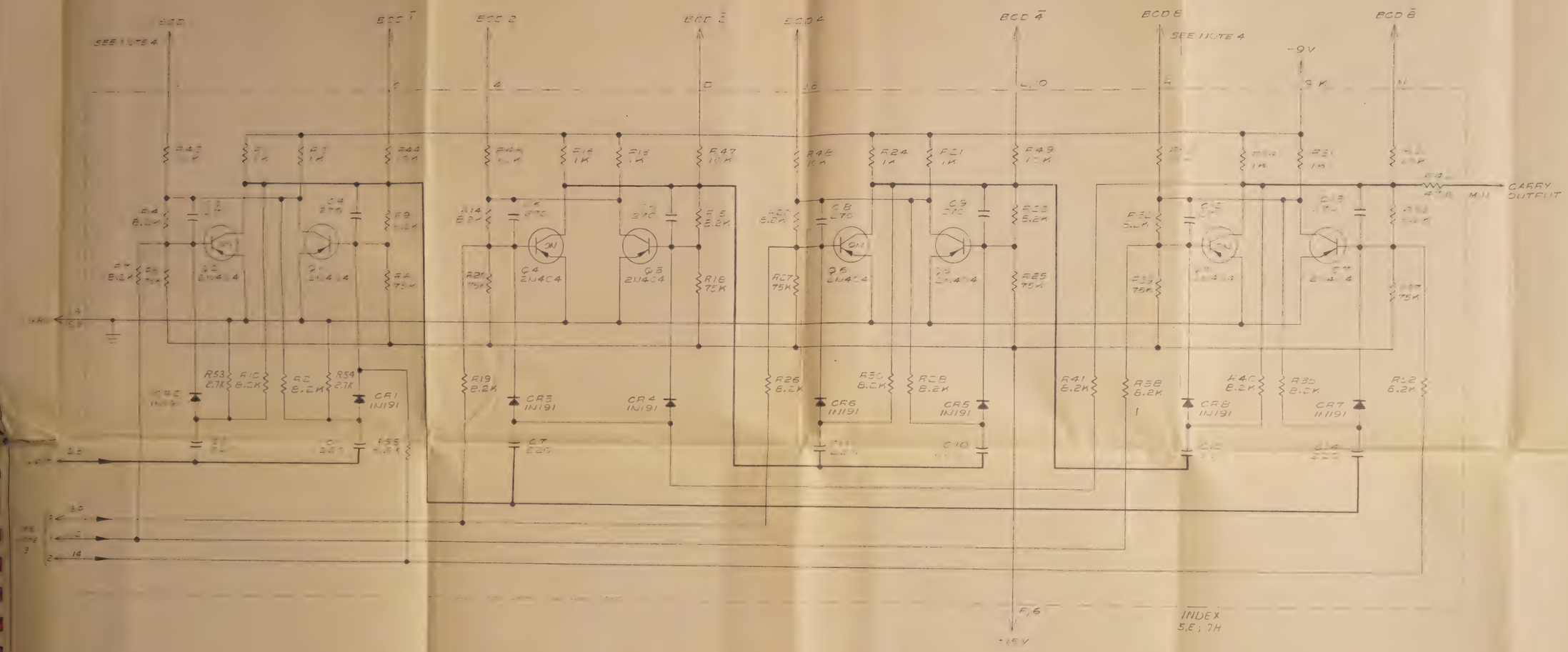
NOTES, UNLESS OTHERWISE SPECIFIED:
1. * INDICATES SILVER MICA DEPOSIT CAPACITOR.
2. Q1 AND Q2 MATCHED FOR I_{CO}.
3. Q3 AND Q4 MATCHED FOR β I_{CO}.
4. Q1 THRU Q4 SELECTED FOR LOW I_{CO}.
5. R31 THRU R33 SELECTED FOR UNITY CURRENT BAL.
6. RESISTOR VALUES IN OHMS, ±5%, ½ W.
7. ALL CAPACITORS ARE 200 V OR GOOD ALL'S.
8. CAPACITOR [illegible] 1 IN unit
9. [illegible] R21 DETERMINED
ENV[illegible]

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED		DRAWN G.P. SAKER, 12-28-61	ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.
		2 PLACE DECIMALS	± .015	CHECKED T.J. SUTAK 1-29-62	SCHMATIC
	DO NOT SCALE THIS DRAWING	1 PLACE DECIMALS	± .005	APPROVED H.R. SECK 1/4/62	20 MC AMPLIFIER AND SCHMITT TRIGGER
		HOLES	± .005	APPROVED	MODEL 925 ELPAC 409-1
NEXT ASSEMBLY	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	ANGLES			CODE IDENT NO. 05162 SIZE D DWG NO. 1 37 A
					SCALE SHEET
	PARTS LIST NO.	MATERIAL			

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	[illegible]	1-10-62	[illegible]



NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS 1/4W, ±5%.
2. CAPACITOR VALUES: < 1 IN μf, > 1 IN μμf.
3. TIE 1 & 3 TOGETHER FOR RESET TO "0" STATE.
   TIE 2 & 3 TOGETHER FOR RESET TO "9" STATE.
4. ON TIME BASE DECADES: BCD 1 & BCD 8 ARE TIED TOGETHER FOR "9" SENSE.
5. TRANSFER TO MEMORY OCCURS ONLY IF BDC IS POSITIVE OR "0".

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

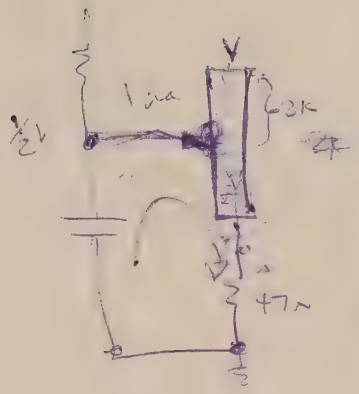
USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED		DRAWN
MODEL 925	DO NOT SCALE THIS DRAWING	2 PLACE DECIMALS	± .015	CHECKED
NEXT ASSEMBLY	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	3 PLACE DECIMALS	± .005	APPROVED
	PARTS LIST NO.	HOLES	± .005	APPROVED
		ANGLES		
		MATERIAL		

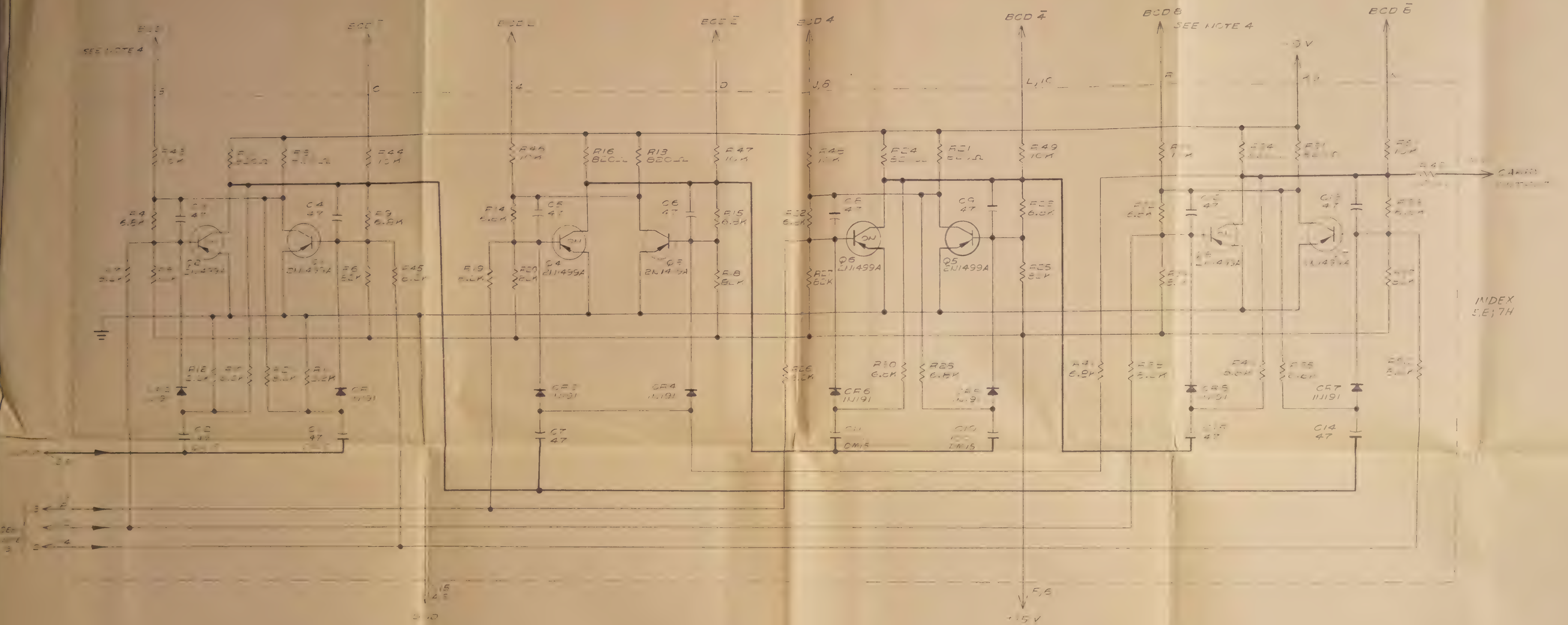
ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

SCHEMATIC,
200 KC DECADE
MODEL 925 ELPAC 309-2

CODE IDENT NO.	SIZE	
05162	D	-1163
SCALE		SHEET

D-3-1163


V
1 ma
2K
47K



NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS 1/4W, ±5%.
2. CAPACITOR VALUES: < 1 IN µf, > 1 IN µµf.
3. TIE 1 & 3 TOGETHER FOR RESET TO "0" STATE
TIE 2 & 3 TOGETHER FOR RESET TO "9" STATE
4. ON TIME BASE DECADES BCD1 & BCD8 ARE TIED TOGETHER FOR "9" SENSE.
5. TRANSFER TO MEMORY OCCURS ONLY IF BDC IS POSITIVE OR "0".

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON	MODEL 925
NEXT ASSEMBLY	
DIMENSIONS ARE IN INCHES	
DO NOT SCALE THIS DRAWING	
KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	
PARTS LIST NO.	
TOLERANCES UNLESS OTHERWISE SPECIFIED	2 PLACE DECIMALS ± .015; 3 PLACE DECIMALS ± .005; HOLES ± .005; ANGLES
MATERIAL	
DRAWN	9-25-61
CHECKED	T. J. [illegible] 10-20-61
APPROVED	H. SE[illegible]
APPROVED	

ERIE PACIFIC — DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

SCHEMATIC, 2 MC DECADE MODEL 925 ELPAC 309-1

CODE IDENT NO.	SIZE	
05162	D	3-1182
SCALE NONE		SHEET

D-3-1182

DIETERICH POST CLEARPRINT 1000H

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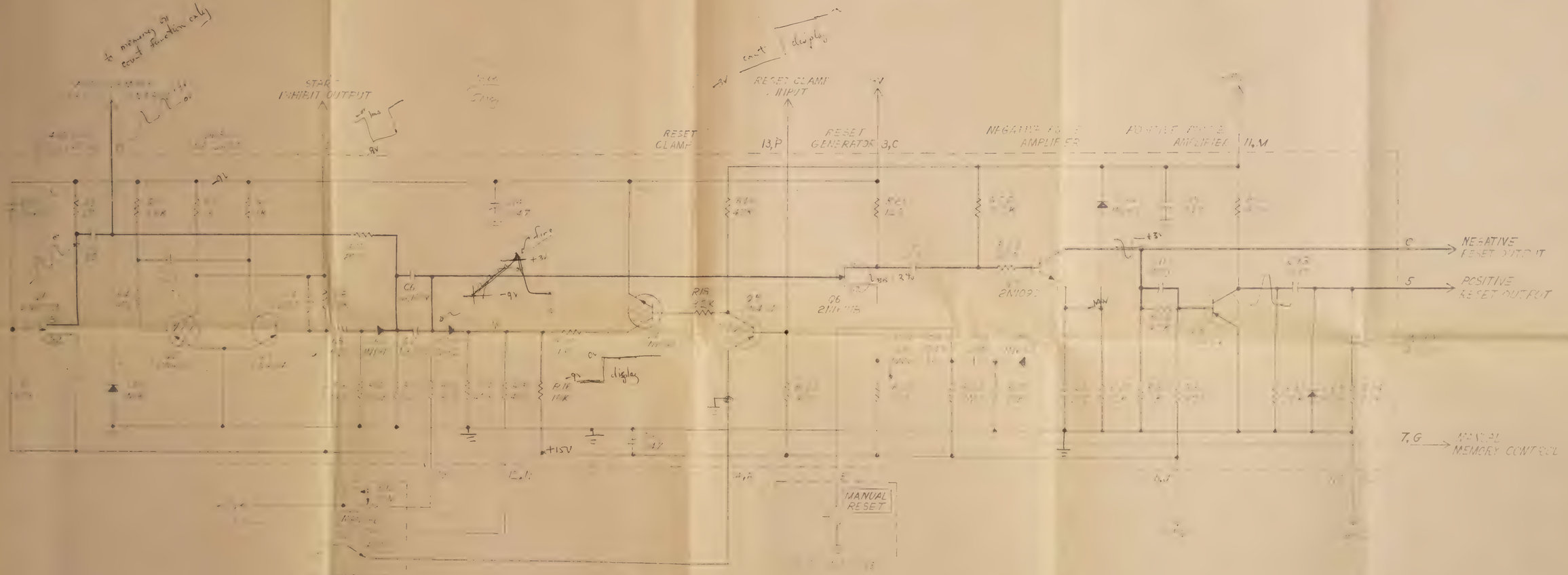
REVISIONS			
SYM	DESCRIPTION	DATE	APP'D
A	[illegible]	[illegible]	[illegible]
B	[illegible]	[illegible]	[illegible]



NOTES, UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTORS IN OHMS ±5%, ¼ W.
2. CAPACITOR VALUES < 1 IN μf, > 1 IN μμf.

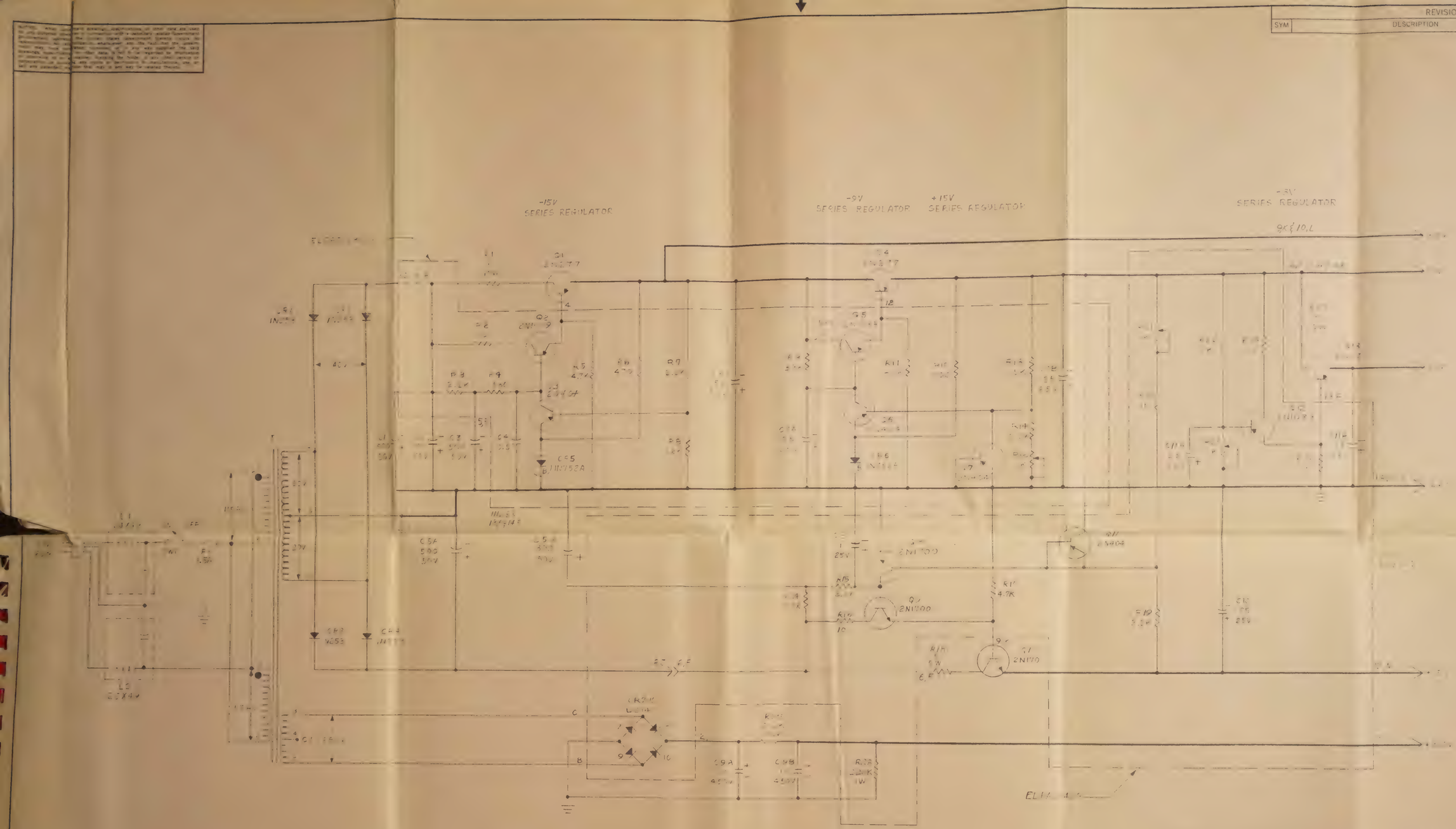
ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

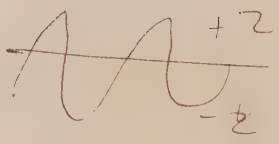
LIST OF MATERIALS OR PARTS LIST

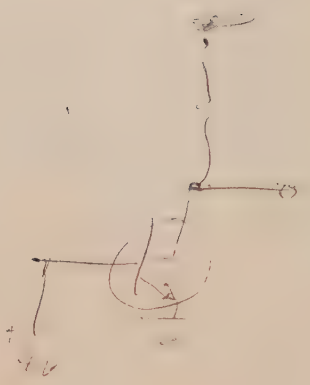
USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACE DECIMALS ± .015; 3 PLACE DECIMALS ± .005; HOLES ± .005; ANGLES	DRAWN C. PEAKER, 12-14-61	ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.
NEXT ASSEMBLY	DO NOT SCALE THIS DRAWING		CHECKED [illegible] 2-2-62	SCHEMATIC RESET AND TIME DISPLAY 2 DEC MC COUNTER
	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS		APPROVED [illegible]	[illegible]
	PARTS LIST NO.	MATERIAL	APPROVED	CODE IDENT NO. 05162 SIZE D 3-11855 A
				SCALE SHEET

DIETZGEN POST CLEARPRINT 1000H

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED


-15V SERIES REGULATOR
-9V SERIES REGULATOR
+15V SERIES REGULATOR
-5V SERIES REGULATOR
9K & 10K
Q1 2N1177
Q2 2N1709
Q3 2N1711
Q4 2N1177
Q5 2N1711
Q6 2N1132A
Q7 2N1100
Q8 2N1100
Q9 2N1110
CR1 1N1183
CR2 1N1183
CR3 W05
CR4 1N1183
CR5 B11N52A
CR6 1N1183
C1 1500 35V
C2 500 50V
C3 .5 200V
C4 .5
C5 .5 200V
C6 .5
C7 .5 200V
C8 .5
C9A 450V
C9B 450V
C10 25V
C11 25V
C12 .5
C13 .5
C14 .5
C15 .5
C16 .5
C17 .5
C18 .5
R1 1W
R2
R3 2.2K
R4 10K
R5 4.7K
R6 470
R7 2.2K
R8 1.2K
R9 2.2K
R10 2.2K
R11 1K
R12 300
R13 1K
R14 1K
R15 1K
R16 2.2K
R17 4.7K
R18 10
R19 2.2K
R20 2.2K
R21 2.2K
R22 2.2K
R23 2.2K
R24 2.2K
R25 2.2K
R26 2.2K
R27 2.2K
R28 2.2K 1W
F1 1.5A
S1
T1
L1 2.5MH
L2 2.5MH
INCOM
ELEC
ELEC
ELEC


+z
-z



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

-15V

INC OUTPUT TO T.B DECADE

EXT TH OUTPUT

Clock

R17 4.7K

R21 220

R20 1K

R19 1.5K

C14 .047

R14 5.6K

Q3 2N1499A

1A 15,S

GND

+15

NOTES UNLESS OTHERWISE SPECIFIED
1. RESISTOR VALUES IN OHMS, ±5%, ¼W
2. CAPACITOR VALUES: <1 IN MF, >1 IN MMF

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACE DECIMALS ± .015; 3 PLACE DECIMALS ± .005; HOLES ± .005; ANGLES	DRAWN
NEXT ASSEMBLY	DO NOT SCALE THIS DRAWING		CHECKED T. J. STAHL
	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS	MATERIAL	APPROVED
	PARTS LIST NO.		APPROVED

ERIE PACIFIC DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

TIME BASE GATES & DECADE DRIVER
ELPAC 1209-1
MODEL 925

CODE IDENT NO.	SIZE	
05162	D	3 1204
SCALE		SHEET

D3-1204

DIETERICH POST CLEARPRINT 1000H

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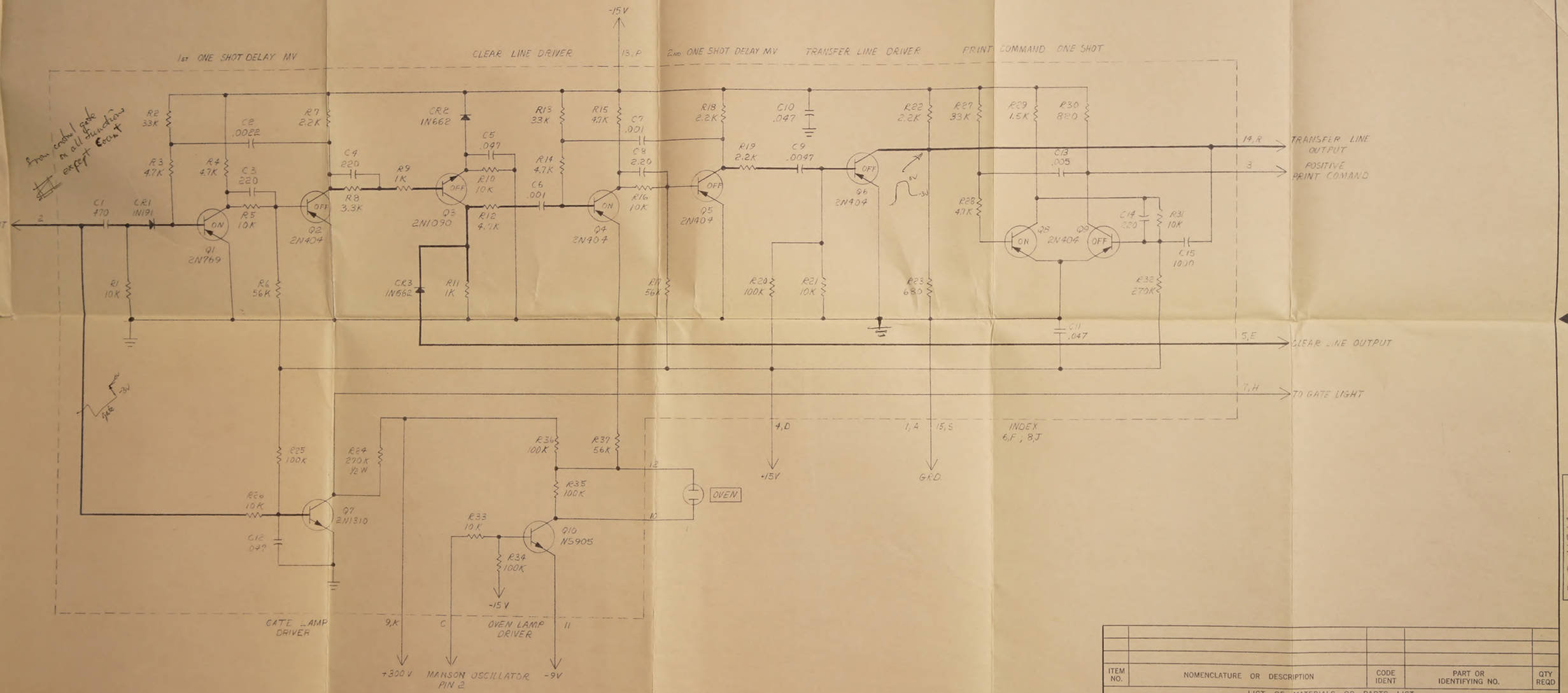
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
	ADDED: PRINT COMMAND ONE SHOT & 1-11-62 OVEN LAMP DRIVER. CO#428 PP&C		



NOTES, UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTORS IN OHMS ±5%, ½W.
2. CAPACITOR VALUES: <1 IN uf, >1 IN uuf

ITEM NO.	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING NO.	QTY REQD

LIST OF MATERIALS OR PARTS LIST

USED ON	DIMENSIONS ARE IN INCHES	TOLERANCES UNLESS OTHERWISE SPECIFIED: 2 PLACE DECIMALS ± .015; 3 PLACE DECIMALS ± .005; HOLES ± .005; ANGLES	DRAWN GPBAKER 1/11/62
NEXT ASSEMBLY	DO NOT SCALE THIS DRAWING		CHECKED
	KEEP FREE FROM SCRATCHES, BURRS AND TOOL MARKS		APPROVED
	PARTS LIST NO.	MATERIAL	APPROVED

ERIE PACIFIC — DIV. ERIE RESISTOR CORP. HAWTHORNE, CALIF.

SCHEMATIC
MEMORY CLEAR & TRANSFER GATE DRIVER, PRINT COMMAND & OVEN LAMP DRIVER
MODEL 925 ELPAC 709-1

CODE IDENT NO.	SIZE	
05162	D	-3-1181 A
SCALE		SHEET

D-3-1181A

DIETERICH-POST CLEARPRINT 1000H

MP MASTER
MA29721